WHAT IS CLAIMED IS (US) :

1. An evaluation apparatus of a liquid crystal display device, comprising:

a signal section for supplying a signal to a liquid crystal panel to be evaluated;

a display detection section for sensing a display state of the liquid crystal panel; and

an analysis section for analyzing a detection result of the display detection section,

the signal section sequentially supplying to the liquid crystal panel (i) a signal corresponding to an original tone, (ii) an overshoot signal, and (iii) a signal corresponding to an attainment tone in this order in test driving, while sweeping a level of the overshoot signal,

the analysis section analyzing detection results of the display detection section obtained in the test driving and storing in association with the original tone and the attainment tone, a level of the overshoot signal that corresponds to an optimum one of the detection results.

2. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, further comprising:

an optical light-receiving element provided in the display detection section; and

a waveform analysis device provided in the analysis

section so as to receive an output from the optical light-receiving element,

the waveform analysis device analyzing waveforms of the output of the optical light-receiving element supplied in response to the test driving so as to obtain (i) relationship between a maximum or minimum level in each of the waveforms and a level corresponding to the attainment tone, and (ii) a time required for attaining the level corresponding to the attainment tone, and storing in association with the original tone and the attainment tone, a level of the overshoot signal that corresponds to an optimum one of the waveforms.

3. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, further comprising:

a thermostatic chamber which contains the liquid crystal panel.

4. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, wherein:

the signal section includes switches which respectively correspond to (i) the signal corresponding to the original tone, (ii) the overshoot signal, and (iii) the signal corresponding to the attainment tone, each of the switches being digitally controlled so as to output as one

of the signals (i), (ii), and (iii) a voltage according to how the each of the switches is turned ON or OFF.

5. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, wherein:

the level of the overshoot signal that the signal section supplies to the liquid crystal panel sequentially changes in accordance with tone transition from the original tone to the attainment tone; and

the analysis section sequentially stores in association with the original tone and the attainment tone, a level of the overshoot signal that corresponds to an optimum one of the detection results.

6. The evaluation apparatus of a liquid crystal display device as set forth in claim 5, wherein:

the level of the overshoot signal that the signal section supplies to the liquid crystal panel is sequentially phased down in predetermined tone transition where the original tone is smaller than the attainment tone.

7. The evaluation apparatus of a liquid crystal display device as set forth in claim 5, wherein:

the level of the overshoot signal that the signal section supplies to the liquid crystal panel is sequentially

phased up in predetermined tone transition where the original tone is larger than the attainment tone.

8. The evaluation apparatus of a liquid crystal display device as set forth in claim 5, wherein:

the level of the overshoot signal that the signal section supplies to the liquid crystal panel is unchanged during one field period.

9. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, wherein:

the signal section supplies to the liquid crystal panel an undershoot signal in accordance with tone transition from the original tone to the attainment tone, after supplying the signal corresponding to the original tone and before supplying the overshoot signal, and performs the test driving while sweeping levels of the overshoot signal and the undershoot signal; and

the analysis section stores in association with the original tone and the attainment tone, levels of the overshoot signal and the undershoot signal that correspond to an optimum one of the detection results.

10. The evaluation apparatus of a liquid crystal display device as set forth in claim 9, wherein:

the level of the undershoot signal that the signal section supplies to the liquid crystal panel sequentially changes in predetermined tone transition; and

the analysis section sequentially stores in association with the original tone and the attainment tone, a level of the undershoot signal that corresponds to an optimum one of the detection results.

11. The evaluation apparatus of a liquid crystal display device as set forth in claim 10, wherein:

the level of the undershoot signal that the signal section supplies to the liquid crystal panel is sequentially phased up in predetermined tone transition where the original tone is smaller than the attainment tone.

12. The evaluation apparatus of a liquid crystal display device as set forth in claim 10, wherein:

the level of the undershoot signal that the signal section supplies to the liquid crystal panel is sequentially phased down in predetermined tone transition where the original tone is larger than the attainment tone.

13. The evaluation apparatus of a liquid crystal display device as set forth in claim 10, wherein:

the level of the undershoot signal that the signal

section supplies to the liquid crystal panel is unchanged during one field period.

14. The evaluation apparatus of a liquid crystal display device as set forth in claim 1, further comprising:

a video signal generating circuit provided in the signal section;

an optical light-receiving element provided in the display detection section; and

a waveform analysis device provided in the analysis section so as to receive an output from the optical light-receiving element,

the video signal generating circuit sequentially supplying to the liquid crystal panel (i) the signal corresponding to the original tone, (ii) the overshoot signal with respect to each of a plurality of field periods, and (iii) the signal corresponding to the attainment tone in this order so as to perform the test driving over the plurality of field periods, while sweeping the level of the overshoot signal in each of the plurality of field periods,

the waveform analysis device analyzing waveforms of the output of the optical light-receiving element supplied in response to the test driving over the plurality of field periods so as to obtain (i) relationship between a maximum or minimum level in each of the plurality of

field periods and a level corresponding to the attainment tone, and (ii) a time required for attaining the level corresponding to the attainment tone, and storing in association with the original tone and the attainment tone, a level of the overshoot signal that corresponds to an optimum one of the waveforms with respect to each of the field periods.

15. An evaluation apparatus of a liquid crystal display device, comprising:

a video signal generating circuit for supplying a signal to a liquid crystal panel to be evaluated;

an optical light-receiving element for sensing a display state of the liquid crystal panel; and

a waveform analysis device to which an output is supplied from the optical light-receiving element,

the video signal generating circuit sequentially supplying to the liquid crystal panel (i) a signal corresponding to an original tone and (ii) an overshoot signal in test driving, while sweeping a level of the overshoot signal,

the waveform analysis device analyzing waveforms of the output of the optical light-receiving element supplied in response to the test driving so as to obtain (i) relationship between a maximum or minimum level in

each of the waveforms and a level corresponding to a desired attainment tone, and (ii) a time required for substantially attaining the level corresponding to the desired attainment tone, and storing in association with the original tone and the attainment tone, a level of the overshoot signal that corresponds to an optimum one of the waveforms in accordance with analysis results.

16. An evaluation apparatus of a liquid crystal display device, comprising:

a signal section for supplying a signal to a liquid crystal panel to be evaluated;

a display detection section for sensing a display state of the liquid crystal panel; and

an analysis section for analyzing a detection result of the display detection section,

the signal section sequentially supplying to the liquid crystal panel a signal corresponding to an original tone and then, in accordance with tone transition from the original tone to an attainment tone, either (i) an overshoot test signal or (ii) both an overshoot test signal and an undershoot test signal in test driving, while sweeping either a level of the signal (i) or levels of both the signals (ii),

the analysis section analyzing detection results of

the display detection section obtained in the test driving and storing in association with the original tone and the attainment tone, either a level of the signal (i) or levels of both the signals (ii) that corresponds to an optimum one of the detection results.

17. The evaluation apparatus of a liquid crystal display device as set forth in claim 16, further comprising:

an optical light-receiving element provided in the display detection section; and

a waveform analysis device provided in the analysis section so as to receive an output waveform from the optical light-receiving element,

the waveform analysis device analyzing output waveforms of the optical light-receiving element supplied in response to the test driving so as to obtain (i) relationship between a maximum or minimum level in each of the output waveforms and a level corresponding to the attainment tone, and (ii) a time required for attaining the level corresponding to the attainment tone, and storing in association with the original tone and the attainment tone, a level of the test signal that corresponds to an optimum one of the output waveforms.

18. The evaluation apparatus of a liquid crystal

display device as set forth in claim 16, wherein:

the overshoot test signal that the signal section supplies to the liquid crystal panel has a plurality of levels in predetermined tone transition; and

the analysis section stores in association with the original tone and the attainment tone, a combination of the plurality of levels in the overshoot test signal that corresponds to an optimum one of the detection results.

19. The evaluation apparatus of a liquid crystal display device as set forth in claim 18, wherein:

the level of the overshoot test signal that the signal section supplies to the liquid crystal panel is unchanged during one field period.

20. The evaluation apparatus of a liquid crystal display device as set forth in claim 16, wherein:

the signal section sequentially supplies to the liquid crystal panel (i) the signal corresponding to the original tone, (ii) the undershoot test signal which has at least one level, and (iii) the overshoot test signal which has at least one level in this order in predetermined tone transition; and

the analysis section stores in association with the original tone and the attainment tone, levels of the

undershoot test signal and the overshoot test signal that correspond to an optimum one of the detection results.

21. The evaluation apparatus of a liquid crystal display device as set forth in claim 20, wherein:

the level of the test signal that the signal section supplies to the liquid crystal panel is unchanged during one field period.

22. An evaluation apparatus of a liquid crystal display device, comprising:

a video signal generating circuit for supplying a video signal to a liquid crystal panel to be evaluated;

an optical light-receiving element facing a display section of the liquid crystal panel; and

a waveform analysis device to which an output is supplied from the optical light-receiving element,

the video signal generating circuit supplying to the liquid crystal panel a video signal whose level changes from A to C, then from C to B, where A is a level corresponding to a tone before being changed, B is a level corresponding to a tone to be attained, and C is a level of an overshoot signal (including a case where C = B), while sweeping the level of the overshoot signal C; and

the waveform analysis device stores in association

with the tone before being changed and the tone to be attained, a level of the overshoot signal C that realizes a response waveform which reaches the tone to be attained fastest without overresponse, among response waveforms obtained while sweeping the level of the overshoot signal C.

23. The evaluation apparatus of a liquid crystal display device as set forth in claim 22, wherein:

overshoot driving is performed over n field periods (n is an integer not less than 1);

the level of the video signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to C1 through Cn, then from C1 through Cn to B over the n field periods while levels of the overshoot signal C1 through Cn are being swept so as to change a combination of the levels C1 through Cn, where the levels of the overshoot signal over the n field periods are sequentially C1, C2, ···, and Cn in this order; and

the waveform analysis device stores in association with the tone before being changed and the tone to be attained, a combination of the levels of the overshoot signals C1 through Cn that realizes a response waveform which reaches the tone to be attained fastest without

overresponse, among response waveforms obtained while sweeping the levels of the overshoot signal C1 through Cn so as to change the combination of the levels C1 through Cn.

24. The evaluation apparatus of a liquid crystal display device as set forth in claim 22, further comprising:

a thermostatic chamber which contains at least the liquid crystal panel.

25. The evaluation apparatus of a liquid crystal display device as set forth in claim 22, wherein:

the video signal generating circuit includes switches which respectively correspond to the signal corresponding to the tone before being changed, the tone to be attained, and the level of the overshoot signal C, each of the switches being digitally controlled so as to output as the video signal a voltage according to how the each of the switches is turned ON or OFF.

26. The evaluation apparatus of a liquid crystal display device as set forth in claim 25, wherein:

the switch for adjusting the level of the overshoot signal C includes two types of switches respectively for coarse adjustment and fine adjustment.

27. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

the video signal generating circuit includes switches which respectively correspond to the signal corresponding to the tone before being changed, the tone to be attained, and the levels of the overshoot signal C1 through Cn, each of the switches being digitally controlled so as to output as the video signal a voltage according to how the each of the switches is turned ON or OFF.

28. The evaluation apparatus of a liquid crystal display device as set forth in claim 27, wherein:

the switch for adjusting the levels of the overshoot signal C1 through Cn includes two types of switches respectively for coarse adjustment and fine adjustment.

29. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in rise response where A < B, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to satisfy $B \leq C1 \geq C2 \geq \cdots \geq Cn$;

a kth level of the overshoot signal Ck (k is an integer that satisfies $1 \leq k \leq n$) is set to a maximum value that does not cause a response waveform with respect to the

level of the overshoot signal Ck to exceed a level of the tone to be attained; and

if the response waveform with respect to the level of the overshoot signal Ck substantially reaches the level of the tone to be attained, Ck+1 through Cn are set to B.

30. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in decay response where A > B, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to $B \geq C1 \leq C2 \leq \cdots \leq Cn$;

a kth level of the overshoot signal Ck (k is an integer that satisfies $1 \leq k \leq n$) is set to a minimum value that does not cause a response waveform with respect to the level of the overshoot signal Ck to exceed a level of the tone to be attained; and

if the response waveform with respect to the level of the overshoot signal Ck substantially reaches the level of the tone to be attained, Ck+1 through Cn are set to B.

31. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in rise response where A < B, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to satisfy $A \leq C1 \leq \cdots \leq Ck < B \leq Ck+1$

≥ ··· ≥ Cn (k is an integer that satisfies 1 ≤ k ≤ n);

a jth level of the overshoot signal Cj (j is an integer that satisfies k+1 ≤ j ≤ n) is set to a maximum value that does not cause a response waveform with respect to the level of the overshoot signal Cj to exceed a level of the tone to be attained; and

if the response waveform with respect to the level of the overshoot signal Cj substantially reaches the level of the tone to be attained, Cj+1 through Cn are set to B.

32. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in rise response where A < B, the level of the video signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to U1 through Un, then from U1 through Un to C1 through Cn, then from C1 through Cn to B while both U1 through Un and C1 through Cn are being swept so as to change a combination of the levels C1 through Cn and a combination of levels U1 through Un, where U1 through Un are levels of an undershoot signal which satisfy A < U1 ≤ ··· ≤ Un ≤ B, and the levels of the overshoot signal C1 through Cn satisfy B ≤ C1 ≥ ··· ≥ Cn; and

the waveform analysis device determines a combination of the levels of the undershoot signal U1

through Un and a combination of the levels of the overshoot signal C1 through Cj (j is an integer that satisfies $1 \leq j \leq n$) that realize a response waveform which substantially reaches a level of the tone to be attained fastest without exceeding the level of the tone to be attained, and sets Cj+1 through Cn to B if $j \leq n-1$.

33. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in decay response where A > B, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to $A > C1 \geq \cdots \geq Ck > B \geq Ck+1 \leq \cdots \leq Cn$ (k is an integer that satisfies $1 \leq k \leq n$);

a jth level of the overshoot signal Cj (j is an integer that satisfies $k+1 \leq j \leq n$) is set to a minimum value that does not cause a response waveform with respect to the level of the overshoot signal Cj to exceed a level of the tone to be attained; and

if the response waveform with respect to the level of the overshoot signal Cj substantially reaches the level of the tone to be attained, Cj+1 through Cn are set to B.

34. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in decay response where A > B, the level of the video

signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to U1 through Un, then from U1 through Un to C1 through Cn, then from C1 through Cn to B while both U1 through Un and C1 through Cn are being swept so as to change a combination of the levels C1 through Cn and a combination of levels U1 through Un, where U1 through Un are levels of an undershoot signal which satisfy $A > U1 \geq \cdots \geq Un > B$, and the levels of the overshoot signal C1 through Cn satisfy $B \geq C1 \leq \cdots \leq Cn$; and

the waveform analysis device determines a combination of the levels of the undershoot signal U1 through Un and a combination of the levels of the overshoot signal C1 through Cj (j is an integer that satisfies $1 \leq j \leq n$) that realize a response waveform which substantially reaches a level of the tone to be attained fastest without exceeding the level of the tone to be attained, and sets Cj+1 through Cn to B if $j \leq n-1$.

35. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in rise response where $A < B$, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to satisfy $B \leq C1 = C2 = \cdots = Cn$; and

a kth level of the overshoot signal Ck (k is an integer

that satisfies $1 \leq k \leq n$) is set to a maximum value that does not cause a response waveform with respect to the levels of the overshoot signal C1 through Cn to exceed a level of the tone to be attained.

36. The evaluation apparatus of a liquid crystal display device as set forth in claim 23, wherein:

in decay response where A > B, C1 through Cn with respect to the tone before being changed and the tone to be attained are set to $B \geq C1 = C2 = \cdots = Cn$; and

a kth level of the overshoot signal Ck (k is an integer that satisfies $1 \leq k \leq n$) is set to a minimum value that does not cause a response waveform with respect to the levels of the overshoot signal C1 through Cn to exceed a level of the tone to be attained.

37. An evaluation method of a liquid crystal display device, comprising the steps of:

repeatedly supplying to a liquid crystal panel to be evaluated, (i) a signal corresponding to an original tone, (ii) an overshoot signal, and (iii) a signal corresponding to an attainment tone sequentially in this order while sweeping a level of the overshoot signal, so as to analyze display results of the liquid crystal panel; and

storing in association with the original tone and the

attainment tone, a level of the overshoot signal that corresponds to an optimum one of the analysis results in accordance with analysis results.

38. An evaluation method of a liquid crystal display device, comprising the steps of:

repeatedly supplying to a liquid crystal panel to be evaluated, a signal corresponding to an original tone and then, in accordance with tone transition from the original tone to an attainment tone, either (i) an overshoot test signal or (ii) both an overshoot test signal and an undershoot test signal while sweeping either a level of the signal (i) or levels of both the signals (ii), so as to analyze display results of the liquid crystal panel; and

storing in association with the original tone and the attainment tone, either a level of the signal (i) or levels of both the signals (ii) that corresponds to an optimum one of analysis results.

39. An evaluation method of a liquid crystal display device which supplies an overshoot signal to a liquid crystal panel to be evaluated so as to evaluate an optimum level of an overshoot signal in accordance with a response result, the evaluation method comprising the steps of:

(i) supplying to the liquid crystal panel a video signal whose level changes from A to C, then from C to B, where A is a level corresponding to a tone before being changed, B is a level corresponding to a tone to be attained, and C is a level of the overshoot signal (including a case where C = B);

(ii) sensing a display image of the liquid crystal panel that is displayed in accordance with the video signal;

(iii) analyzing a waveform of the sensed display image; and

(iv) storing in association with the tone before being changed and the tone to be attained, a level of the overshoot signal C that realizes a response waveform which reaches the tone to be attained fastest without overresponse, among response waveforms with respect to the level of the overshoot signal C,

the steps (i) through (iii) being repeated while sweeping the level of the overshoot signal C.

40. The evaluation method of a liquid crystal display device as set forth in claim 39, comprising the steps of:

the level of the video signal that a video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to C1 through Cn, then from C1 through Cn to B over n field periods (n is an integer

not less than 1) while levels of the overshoot signal C1 through Cn are being swept so as to change a combination of the levels C1 through Cn, where the levels of the overshoot signal over the n field periods are sequentially C1, C2, ···, and Cn in this order,

overshoot driving being performed over the n field periods.

41. A liquid crystal device which includes a liquid crystal panel and an overshoot drive circuit, wherein:

the overshoot drive circuit stores an optimum level of an overshoot signal as a Look-up Table; and

the optimum level of the overshoot signal is obtained by an evaluation method that has the steps of repeatedly supplying to the liquid crystal panel, (i) a signal corresponding to an original tone, (ii) an overshoot signal, and (iii) a signal corresponding to an attainment tone sequentially in this order while sweeping a level of the overshoot signal, so as to analyze display results of the liquid crystal panel; and in accordance with analysis results, determining the optimum level of the overshoot signal in association with the original tone and the attainment tone.

42. A liquid crystal display device which includes a liquid crystal panel and a drive circuit, wherein:

the drive circuit stores as a Look-up Table an optimum level of either (i) an overshoot test signal or (ii) both an overshoot test signal and an undershoot test signal in accordance with tone transition from an original tone to an attainment tone; and

the optimum level is set to a level of the test signal that corresponds to an optimum one of display results, which is obtained by repeatedly supplying to the liquid crystal panel, a signal corresponding to the original tone and then, in accordance with the tone transition, either (i) the overshoot test signal or (ii) both the overshoot test signal and the undershoot test signal while sweeping either a level of the signal (i) or levels of both the signals (ii), so as to analyze the display results of the liquid crystal panel.

43. The liquid crystal display device as set forth in claim 42, wherein:

the drive circuit stores as a Look-up Table an optimum combination of a plurality of levels of the overshoot signal in predetermined tone transition; and

the optimum combination is set to a combination of levels of the overshoot test signal that corresponds to an optimum one of display results, which is obtained by repeatedly supplying to the liquid crystal panel, a signal

corresponding to the original tone and then the overshoot test signal having a plurality of levels while sweeping the levels of the overshoot test signal, so as to analyze the display results of the liquid crystal panel.

44. The liquid crystal display device as set forth in claim 42, wherein:

the drive circuit stores as a Look-up Table an optimum combination of a level of the overshoot signal and a level of an undershoot signal in predetermined tone transition; and

the optimum combination is set to a combination of a level of the undershoot test signal and a level of the overshoot test signal that corresponds to an optimum one of display results, which is obtained by repeatedly supplying to the liquid crystal panel, a signal corresponding to the original tone, the undershoot test signal, and the overshoot test signal sequentially in this order while sweeping the levels of the undershoot and overshoot test signals, so as to analyze the display results of the liquid crystal panel.

45. The liquid crystal display device as set forth in claim 42, wherein:

the optimum one of display results is a display result

where the attainment tone is substantially displayed fastest without exceeding the attainment tone.

46. The liquid crystal display device as set forth in claim 42, wherein:

the Look-up Table is stored with respect to each of a plurality of temperatures.

47. A liquid crystal display device which includes a liquid crystal panel, a drive circuit in which a level of an overshoot signal C is stored as a Look-up Table for overshoot driving, and an evaluation apparatus for determining the level of the overshoot signal C,

the evaluation apparatus comprising:

a video signal generating circuit for supplying a video signal to the liquid crystal panel to be evaluated;

an optical light-receiving element facing a display section of the liquid crystal panel; and

a waveform analysis device to which an output waveform is supplied from the optical light-receiving element,

the video signal generating circuit supplying to the liquid crystal panel a video signal whose level changes from A to C, then from C to B, where A is a level corresponding to a tone before being changed, B is a level

corresponding to a tone to be attained, and C is a level of an overshoot signal (including a case where C = B), while sweeping the level of the overshoot signal C; and

the waveform analysis device stores in association with the tone before being changed and the tone to be attained, a level of the overshoot signal C that realizes a response waveform which reaches the tone to be attained fastest without overresponse, among response waveforms obtained while sweeping the level of the overshoot signal C.

48. The liquid crystal display device as set forth in claim 47, wherein:

the drive circuit further stores levels of the overshoot signal C1 through Cn as a Look-up Table for overshoot driving;

the level of the video signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to C1 through Cn, then from C1 through Cn to B over n field periods (n is an integer not less than 1) while the levels of the overshoot signal C1 through Cn are being swept so as to change a combination of the levels C1 through Cn, where the levels of the overshoot signal over the n field periods are sequentially C1, C2, ···, and Cn in this order; and

the waveform analysis device stores in association with the tone before being changed and the tone to be attained, levels of the overshoot signals C1 through Cn that realize a response waveform which reaches the tone to be attained fastest without overresponse, among response waveforms obtained while sweeping the levels of the overshoot signal C1 through Cn.

49. The liquid crystal display device as set forth in claim 48, wherein:

the drive circuit further stores levels of the overshoot signal C1 through Cn and levels of an undershoot signal U1 through Un as a Look-up Table for overshoot driving;

in rise response where A < B, the level of the video signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to U1 through Un, then from U1 through Un to C1 through Cn, then from C1 through Cn to B while both U1 through Un and C1 through Cn are being swept so as to change a combination of the levels C1 through Cn and a combination of levels U1 through Un, where U1 through Un are levels of the undershoot signal which satisfy $A < U1 \leq \cdots \leq Un \leq B$, and the levels of the overshoot signal C1 through Cn satisfy $B \leq C1 \geq \cdots \geq Cn$; and

the waveform analysis device determines a

combination of the levels of the undershoot signal U1 through Un and a combination of the levels of the overshoot signal C1 through Cj (j is an integer that satisfies $1 \leq j \leq n$) that realize a response waveform which substantially reaches a level of the tone to be attained fastest without exceeding the level of the tone to be attained, and sets Cj+1 through Cn to B if $j \leq n-1$.

50. The liquid crystal display device as set forth in claim 48, wherein:

the drive circuit further stores levels of the overshoot signal C1 through Cn and levels of an undershoot signal U1 through Un as a Look-up Table for overshoot driving;

in decay response where A > B, the level of the video signal that the video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to U1 through Un, then from U1 through Un to C1 through Cn, then from C1 through Cn to B while both U1 through Un and C1 through Cn are being swept so as to change a combination of the levels C1 through Cn and a combination of levels U1 through Un, where U1 through Un are levels of the undershoot signal which satisfy $A > U1 \geq \cdots \geq Un > B$, and the levels of the overshoot signal C1 through Cn satisfy $B \geq C1 \leq \cdots \leq Cn$; and

the waveform analysis device determines a

combination of the levels of the undershoot signal U1 through Un and a combination of the levels of the overshoot signal C1 through Cj (j is an integer that satisfies $1 \leq j \leq n$) that realize a response waveform which substantially reaches a level of the tone to be attained fastest without exceeding the level of the tone to be attained, and sets Cj+1 through Cn to B if $j \leq n-1$.

51. A liquid crystal display device which includes a liquid crystal panel, and a drive circuit in which a level of an overshoot signal C is stored as a Look-up Table for overshoot driving, wherein:

the level of the overshoot signal C is evaluated by a method which supplies an overshoot signal to a liquid crystal panel to be evaluated so as to evaluate an optimum level of an overshoot signal in accordance with a response result,

the method comprising the steps of:

(i) supplying to the liquid crystal panel a video signal whose level changes from A to C, then from C to B, where A is a level corresponding to a tone before being changed, B is a level corresponding to a tone to be attained, and C is a level of the overshoot signal (including a case where C = B);

(ii) sensing a display image of the liquid crystal panel

that is displayed in accordance with the video signal;

(iii) analyzing a waveform of the sensed display image; and

(iv) storing in association with the tone before being changed and the tone to be attained, a level of the overshoot signal C that realizes a response waveform which reaches the tone to be attained fastest without overresponse, among response waveforms with respect to the level of the overshoot signal C,

the steps (i) through (iii) being repeated while sweeping the level of the overshoot signal C.

52. the liquid crystal display device as set forth in claim 51, wherein:

the drive circuit further stores levels of the overshoot signal C1 through Cn and levels of an undershoot signal U1 through Un as a Look-up Table for overshoot driving;

the level of the video signal that a video signal generating circuit supplies to the liquid crystal panel sequentially changes from A to C1 through Cn, then from C1 through Cn to B over n field periods (n is an integer not less than 1) while levels of the overshoot signal C1 through Cn are being swept so as to change a combination of the levels C1 through Cn, where the levels of the overshoot signal over the n field periods are sequentially

C1, C2, ···, and Cn in this order,

overshoot driving being performed over the n field periods.